**2. LAPLACE TRANSFORMATION**

**LAPLACE TRANSFORMATION:** It’s used to transform time domain function to frequency domain function.

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|  |  | Objective Function,  Image Function (Frequency Domain Fun.), |
| Laplace Operator |

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|  |  | |  |  | | --- | --- | | **“n” is Integer** | **“n” is Fraction** | |  |  | |  |  | | |
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**GAMMA FUNCTION:**

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| **FIRST SHIFT PROPERTY:**  If , then |  |  |
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| **THEOREM-I:**  Multiplication by “t” | If then |  |  |

**EVALUATION OF DEFINITE INTEGRAL USING L.T. TECHNIQUE:**

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| **THEOREM-II:**  Division by “t” | If then |  |  |

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| **THEOREM-III:** If then |  |
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| **THEOREM-IV:** | If then |  |  |

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| --- | --- | --- | --- |
| **UNIT STEP FUNCTION:** | | **SHIFTED UNIT STEP FUNCTION:** | |
| **THEOREM-A** | | **THEOREM-B** | |
|  |  |  |  |
|  | | **THEOREM-C** | |
|  | |
|  | |
|  | | **THEOREM-D** | |
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| **LAPLACE OF SEMI PERIODIC FUNCTION:**  If , then |  |

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| --- | --- |
| **CONVOLUTION THEOREM:**  If , then |  |

**INVERSE LAPLACE TRANSFORMATION USING PARTIAL FRACTIONS:**

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| --- | --- |
| **FORM-I:**  **Non-Repeated Linear Factor** |  |
| **FORM-II:**  **Repeated Linear Factor** |  |
| **FORM-III:**  **Quadratic Factor** |  |